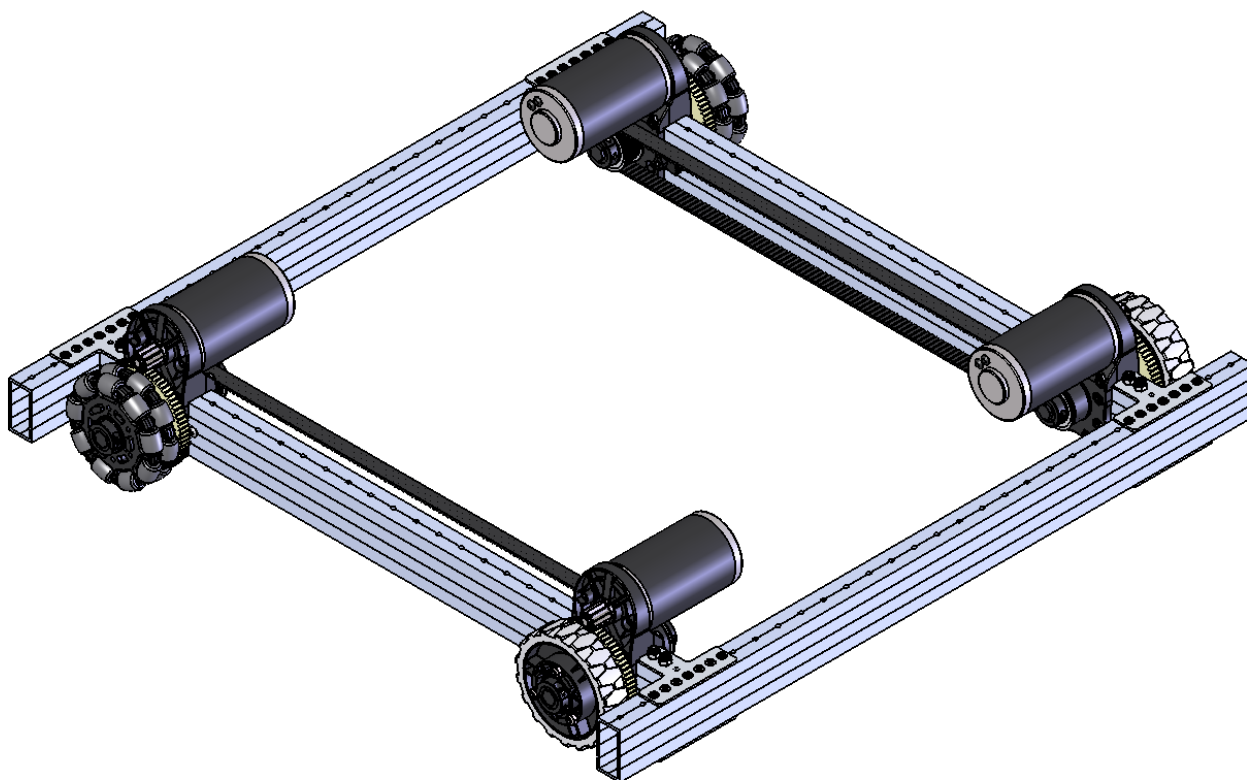
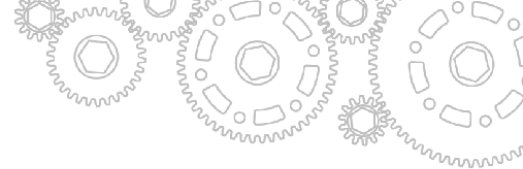


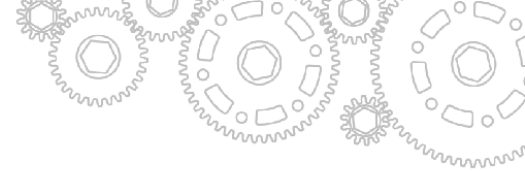
VersaChassis - 2 Traction and 2 Omni

217-8000-002



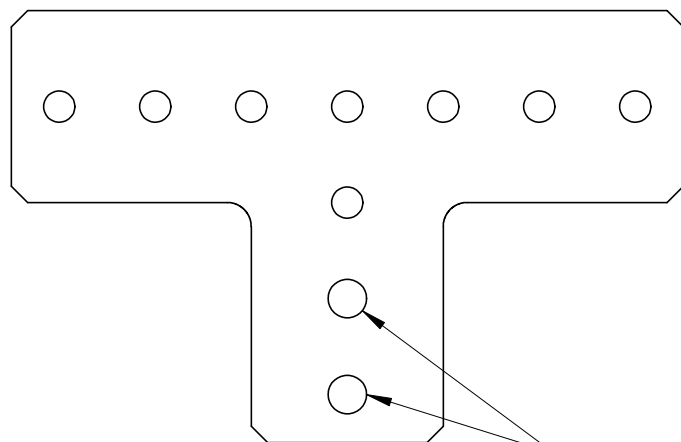
VersaChassis - 2 Traction and 2 Omni

217-8000-002

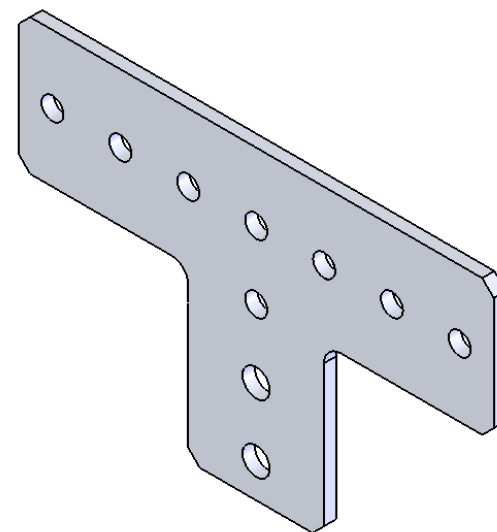


Bill of Materials

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
1	72T Gear with 1/2" Hex Bore & VersaKeys	217-2716	4
2	VersaWheel DT (4")	217-3197	2
3	4" Omni Wheel	217-2584	2
4	Axle, Bearing Block	From 217-3309 or 217-2753	4
5	Timing Pulley (HTD 5mm) - 24T, 15mm Double Flange, 1/2" Hex	217-3228	4
6	1/16" Acetal Spacer 1/2" Hex	217-3257	8
7	VersaHub (1.125" Bearing Pilot, 1/4" Thick, w/ Plate Sprocket Mount)	217-3234	2
8	WCP Cam	217-3431	2
9	High Strength Clamping Shaft Collar - 1/2" Hex ID	217-4106	8
10	11t CIM Gear w/ 12t Center Distance (Steel) with Mounting Hardware	217-3107	4
11	225T 5mm HTD Timing Belt - 15mm wide	217-3486	2
12	CIM Motor	217-2000	4
13	Button Head Screw, #8-32 x 1.250 Long	SBS0832-1250	6
14	Button Head Screw, #8-32 x 2.000 Long	SBS0832-2000	6
15	Button Head Screw, #10-32 x 2.500 Long	SBS1032-2500	8
16	Button Head Screw, #10-32 x 1.375" Long	SBS1032-1375	2
17	Flanged Bearing - 0.500" (Hex) x 1.125in x 0.313in v2	217-3875-001	12
18	Single Reduction Clamping Gearbox	217-4156	4
19	Front/Rear Rail	217-8000-002-001	2
20	Side Rail	217-8000-002-002	2
21	Frame Gusset	217-8000-002-004	8
22	Socket Head Screw #10-32 x 1.375" Long	#10-32 Nut	8
23	#10-32 Nut	217-4155-002	8
24	5/32" Rivet	Rivet	56
25	Nut, Nylock #10-32	NNY1032-ZC	8
26	#8-32 Nut	NNY0832	6



ENLARGE HOLE TO #10 SCREW CLEARANCE (.201")



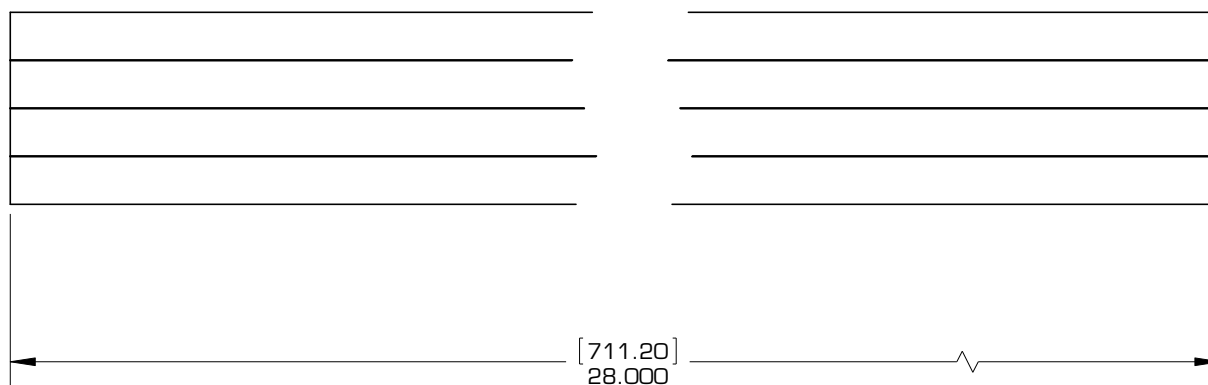
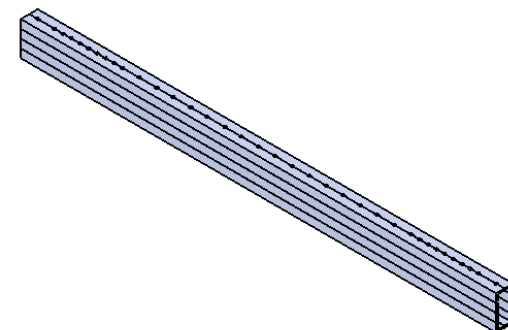
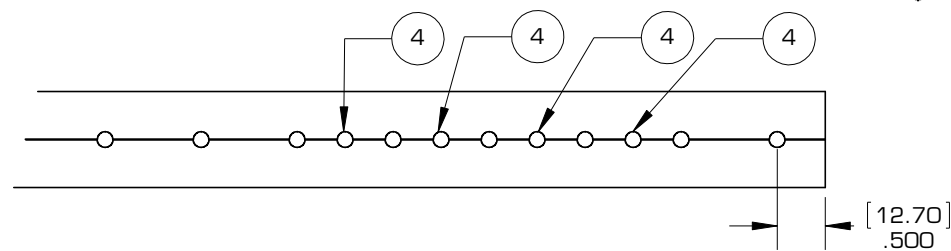
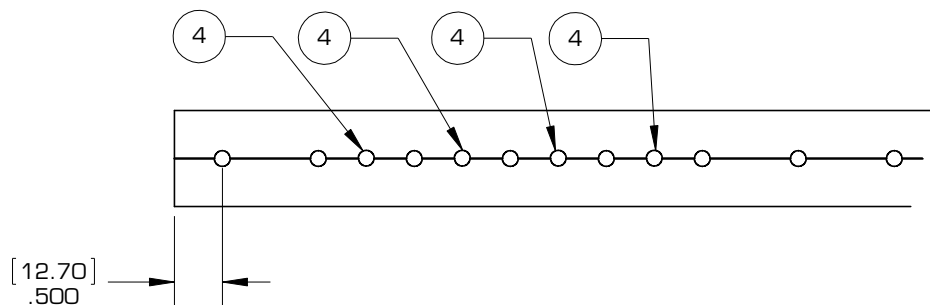
NOTES:

1. MODIFY VERSACHASSIS GUSSET (217-3557)
2. QTY: 8 PER ROBOT



Description	217-8000-002-004		
Dwg No	217-8000-002-004		
Project	VersaChassis - 2 Traction and 2 Omni	Sheet 3 of 14	
Release	2014-12-16	ALL DIMENSIONS ARE IN INCHES [MM].	

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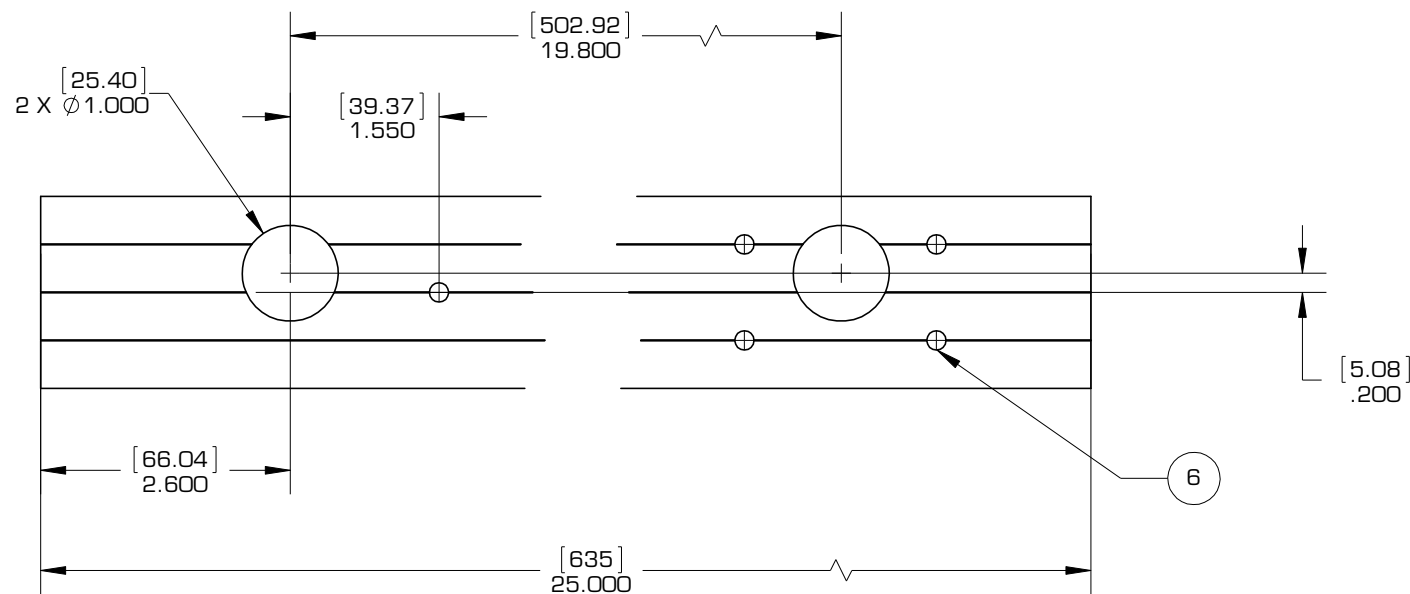
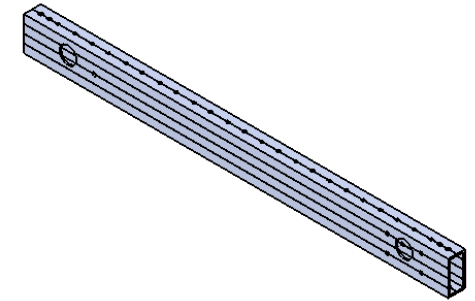
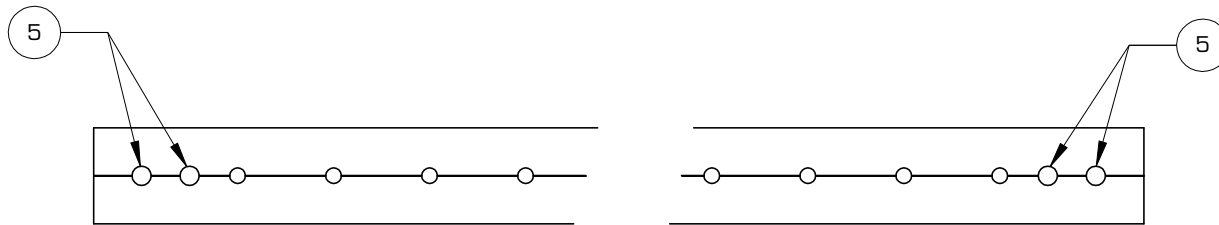
NOTES:

1. CUT FROM VERSAFRAME 1"X2" X .10" PRE-DRILLED TUBE STOCK (59" LENGTH) (217-3453)
2. QTY: 2 PER ROBOT
3. LENGTH CAN BE ADJUSTED. BE CAREFUL TO ENSURE CHAIN OR BELT LENGTHS AND FRAME PERIMETER ARE CORRECT.
4. DRILL NEW 5/32" ϕ HOLES THRU BOTH SIDES
MATCH DRILL FROM GUSSET (SEE MATCH DRILL GUIDE)



Description	217-8000-002-001		
Dwg No	217-8000-002-001		
Project	VersaChassis - 2 Traction and 2 Omni	Sheet 4 of 14	
Release	2014-12-16	ALL DIMENSIONS ARE IN INCHES [MM].	

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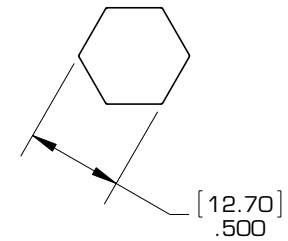
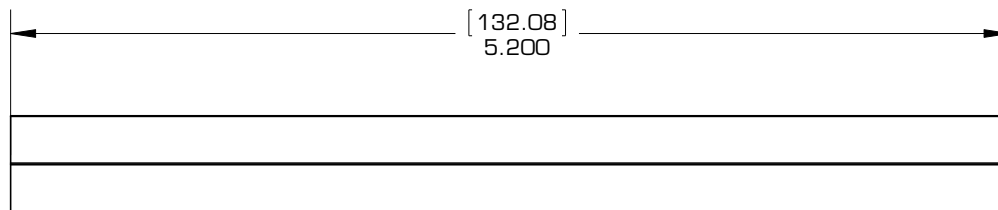
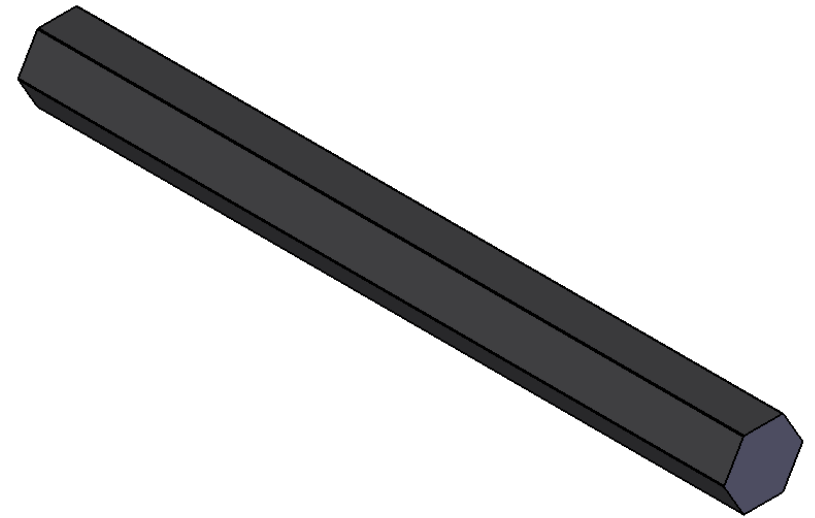


1. CUT FROM VERSAFRAME 1"X2" X .10" PRE-DRILLED TUBE STOCK (59" LENGTH) (217-3453)
2. QTY: 2 PER ROBOT
3. LENGTH CAN BE ADJUSTED. BE CAREFUL TO ENSURE CHAIN OR BELT LENGTHS AND FRAME PERIMETER ARE CORRECT
4. HOLE LOCATION DEPENDS ON WHERE YOU CHOOSE TO PUT WHEELS, USE THIS DRAWING IF BUILDING COMPLETELY PER THESE INSTRUCTIONS.
5. MATCH DRILL FROM GUSSET TO CLEARANCE FOR #10 SCREW (.201") (SEE MATCH DRILL GUIDE)
6. MATCH DRILL FROM PLASTIC CLAMPING GEARBOX (217-4156) (SEE MATCH DRILL GUIDE)



Description	217-8000-002-002		
Dwg No	217-8000-002-002		
Project	VersaChassis - 2 Traction and 2 Omni		Sheet 5 of 14
Release	2014-12-16	ALL DIMENSIONS ARE IN INCHES [MM].	

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NOTES:

1. CUT FROM 1/2" HEX STOCK (3 FEET) (217-2753)
2. QTY: 4 PER ROBOT



Description	Axle, Bearing Block		
Dwg No	217-8000-002-003		
Project	VersaChassis - 2 Traction and 2 Omni	Sheet 6 of 14	
Release	2014-12-16	ALL DIMENSIONS ARE IN INCHES [MM].	

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VersaChassis - 2 Traction and 2 Omni

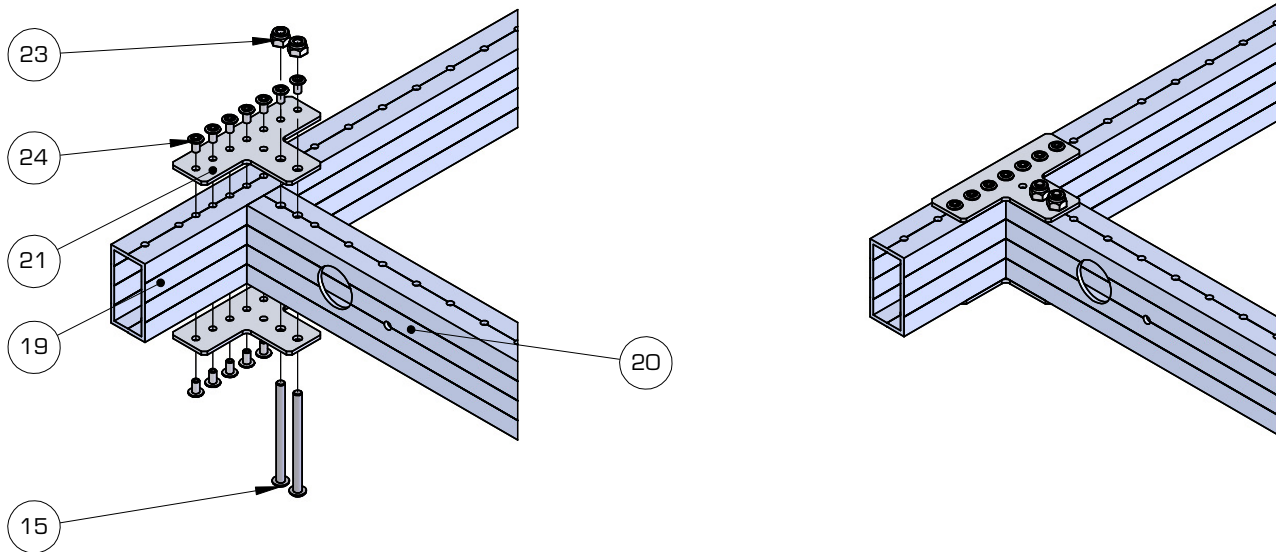
217-8000-002

Frame Assembly

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
15	Button Head Screw, #10-32 x 2.500 Long	SBS1032-2500	8
19	Front/Rear Rail	217-8000-002-001	2
20	Side Rail	217-8000-002-002	2
21	Frame Gusset	217-8000-002-004	8
23 or 25	#10-32 Nut	217-4155-002	8
24	5/32" Rivet	Rivet	56

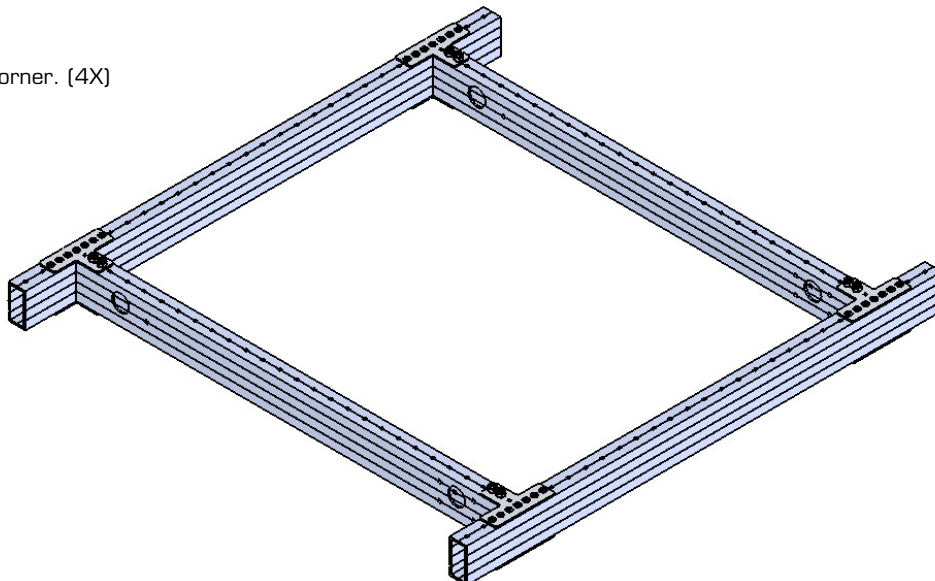
Step 1:

Attach VersaChassis Gussets to front and back VersaFrame with 5/32 pop rivets (match drill any absent holes). Match drill holes from gusset to the side rail, then fasten with #10-32 screws and nuts as shown.



Step 2:

Repeat for each corner. (4X)



VersaChassis - 2 Traction and 2 Omni

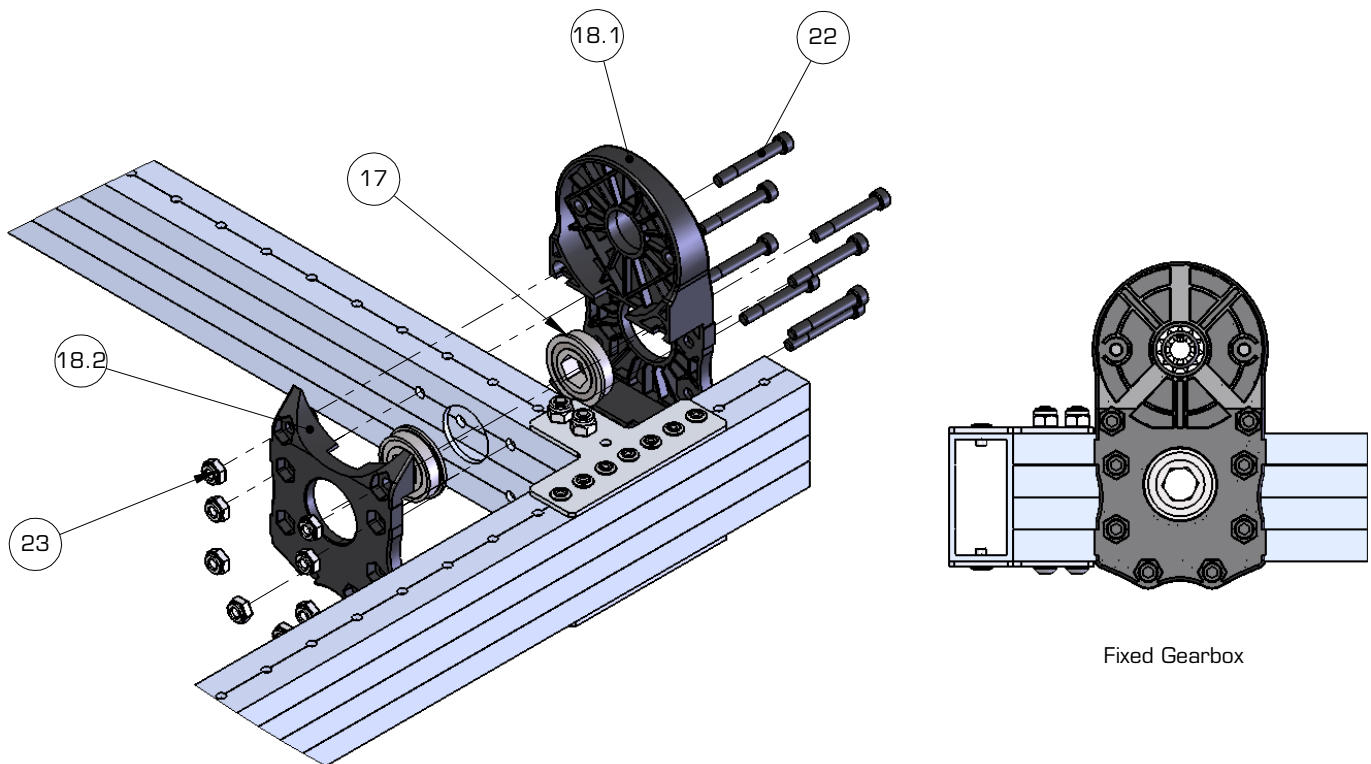
217-8000-002

Gearbox Assembly

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
8	WCP Cam	217-3431	2
16	Button Head Screw, #10-32 x 1.375" Long	SBS1032-1375	2
17	Flanged Bearing - 0.500" (Hex) x 1.125in x 0.313in v2	217-3875-001	12
18	Single Reduction Clamping Gearbox	217-4156	4
18.1	Single Reduction Clamping Gearbox (front)	From 217-4156	4
18.2	Single Reduction Clamping Gearbox (back)	From 217-4156	4
22	Socket Head Screw #10-32 x 1.375" Long	#10-32 Nut	32
23	#10-32 Nut	217-4155-002	32

Step 3:

Attach Single Reduction Clamping Gearbox (217-4156) with Hex bearings (217-3875) to frame rail. Then, match drill through the four screw clearance (.201") holes on the tube face. Then, install (4X) #10-32x 1.375" long socket head screws. This gearbox is fixed while the gearbox on the opposite end will be sliding with a WCP Cam to tension your belt or chain (see Step 2), fixed gearbox should be against gusset to ensure space to tension belt with the lengths provided in this guide.



Fixed Gearbox

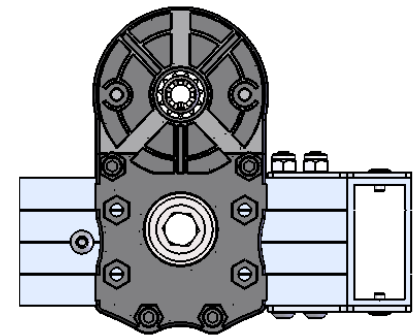
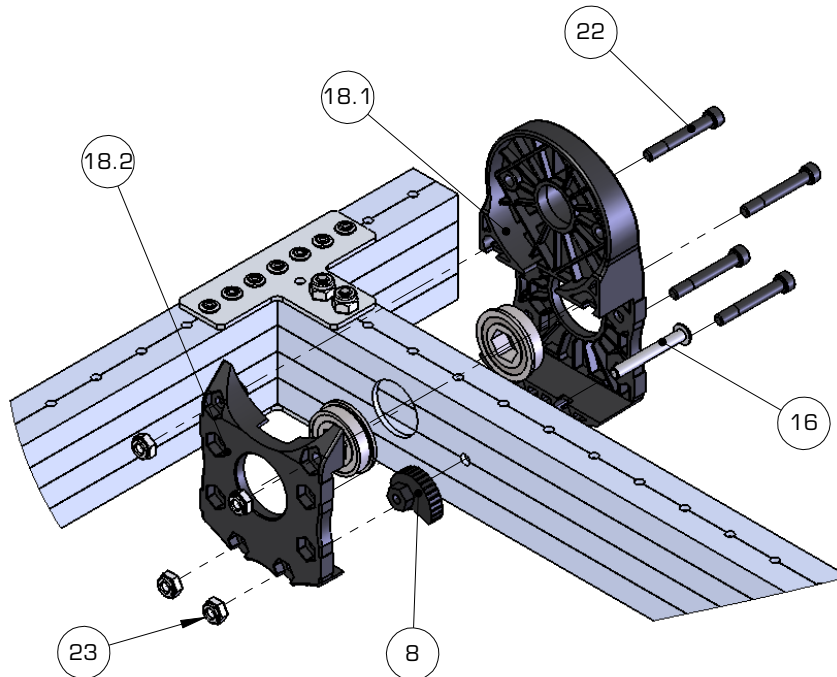
VersaChassis - 2 Traction and 2 Omni

217-8000-002

Gearbox Assembly - Cont.

Step 4:

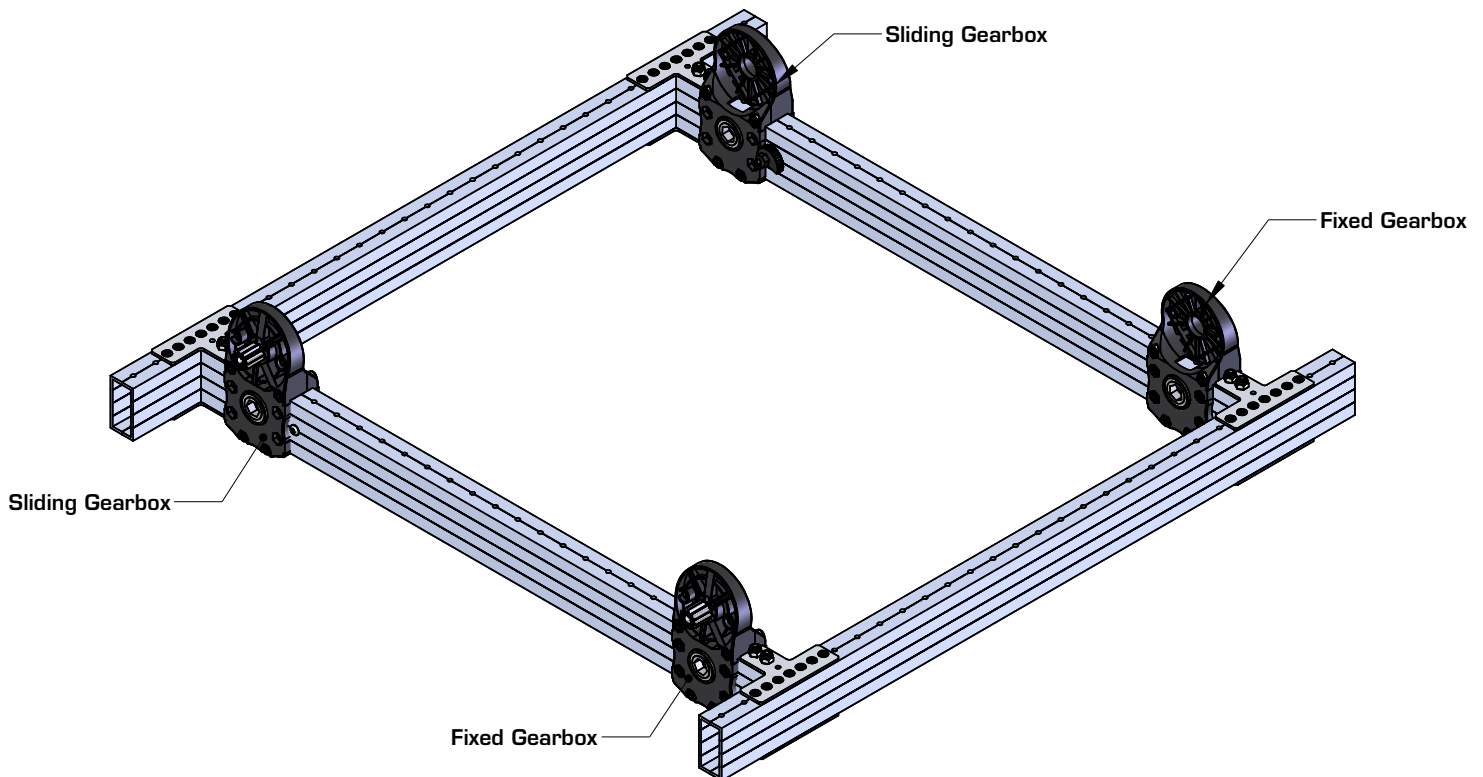
Attach Single Reduction Clamping Gearbox (217-4156) and 1/2" Hex bearings (217-3875) to frame rail. Leave assembly screws snug, but not tight. Insert #10-32 Button head screw for WCP CAM. Install Cam.



Sliding Gearbox

Step 5:

Mirror assembly to opposite frame rail.



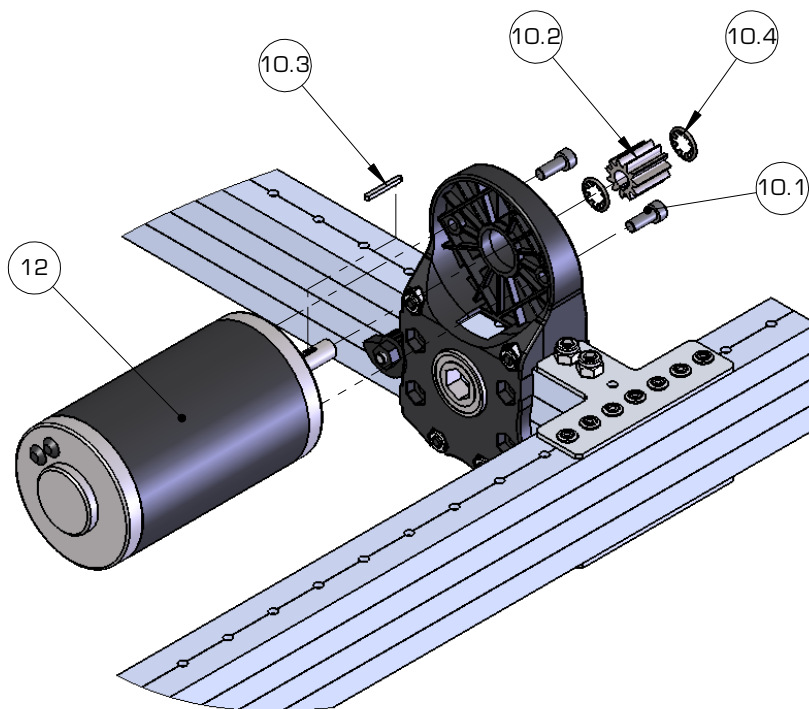
VersaChassis - 2 Traction and 2 Omni

217-8000-002

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
10	11t CIM Gear w/ 12t Center Distance (Steel) with Mounting Hardware	217-3107	4
10.1	#10-32 SOCKET HEAD CAP SCREW - 1/2" LONG	From 217-3107	2
10.2	11T CIM Gear w/ 12T Center Distance (Steel)	From 217-3107	1
10.3	2mm Key	From 217-3107	1
10.4	ROTORCLIP TX-31, OR EQUIV. (retaining ring)	From 217-3107	2
12	CIM Motor	217-2000	4

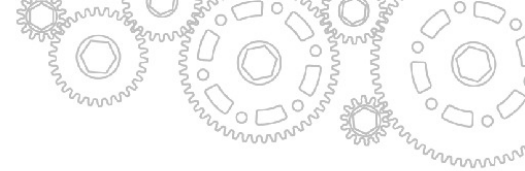
Step 6:

Assemble CIM motor into each gearbox using the hardware provided with the 11T CIM pinion. A retaining ring is required on both sides of the pinion to locate the pinion for proper gear mesh. Press on a retaining clip, then insert 2mm key into keyway, slide on 11T pinion, and finish with final retaining clip. Repeat for each gearbox. [4X].



VersaChassis - 2 Traction and 2 Omni

217-8000-002

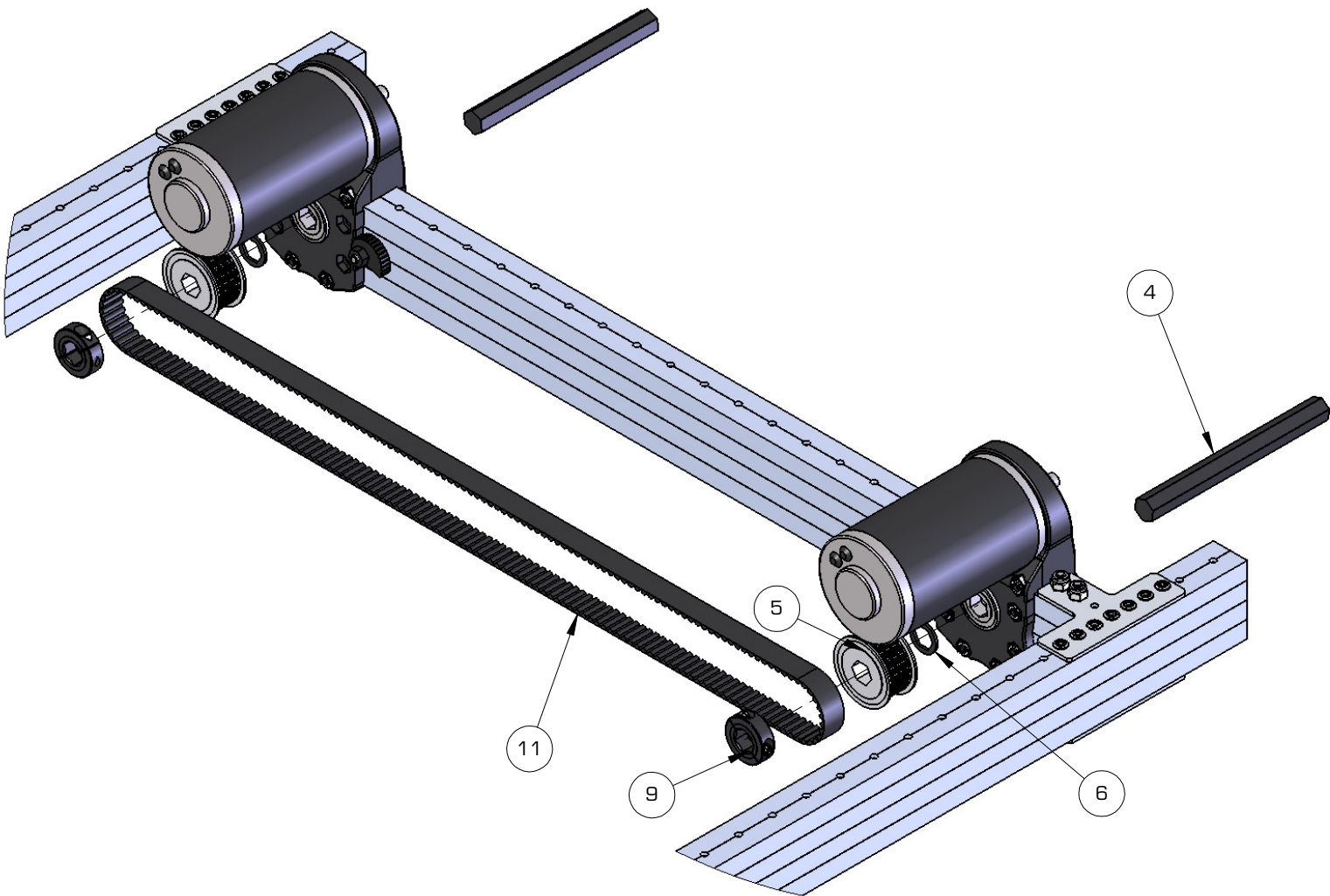


Belt Installation and Tensioning

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
4	Axle, Bearing Block	From 217-3309 or 217-2753	4
5	Timing Pulley (HTD 5mm) - 24T, 15mm Double Flange, 1/2" Hex	217-3228	4
6	1/16" Acetal Spacer 1/2" Hex	217-3257	8
9	High Strength Clamping Shaft Collar - 1/2" Hex ID	217-4106	8
11	225T 5mm HTD Timing Belt - 15mm wide	217-3486	2

Step 7:

Insert 1/2" Hex axes into gearboxes, then slide the Acetal Spacer and Timing Pulley onto axle and secure with High Strength Clamping Shaft Collar. Be sure to not crimp belt, belt should be assembled onto pulleys before sliding onto axles. Tighten WCP Cam until belt is tight, then **lock Cam in place and tighten gearbox screws.**



VersaChassis - 2 Traction and 2 Omni

217-8000-002

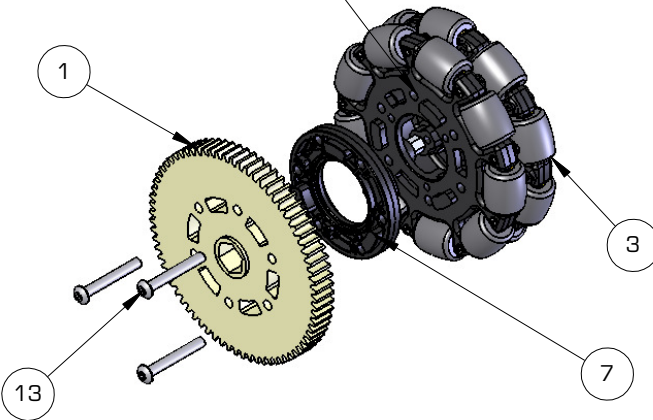
Wheel Assembly

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
1	72T Gear with 1/2" Hex Bore & VersaKeys	217-2716	4
2	VersaWheel DT (4")	217-3197	2
3	4" Omni Wheel	217-2584	2
7	VersaHub (1.125" Bearing Pilot, 1/4" Thick, w/ Plate Sprocket Mount)	217-3234	2
13	Button Head Screw, #8-32 x 1.250 Long	SBS0832-1250	6
14	Button Head Screw, #8-32 x 2.000 Long	SBS0832-2000	6
26	#8-32 Nut	NNY0832	6

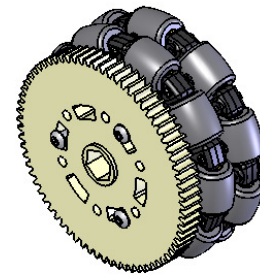
Step 8:

Assemble 72T gear (217-2716) to 4" Omni Wheel (217-2574) using (3X) #8-32 Screws and a 1/4" width VersaHub. Build (2X) of this assembly. Some teams may prefer (6X) screws, but since the VersaKeys transmit torque from the gear to the wheel, only (3X) are required. The use of Loctite is recommended.

#8-32 threaded standoffs in wheel



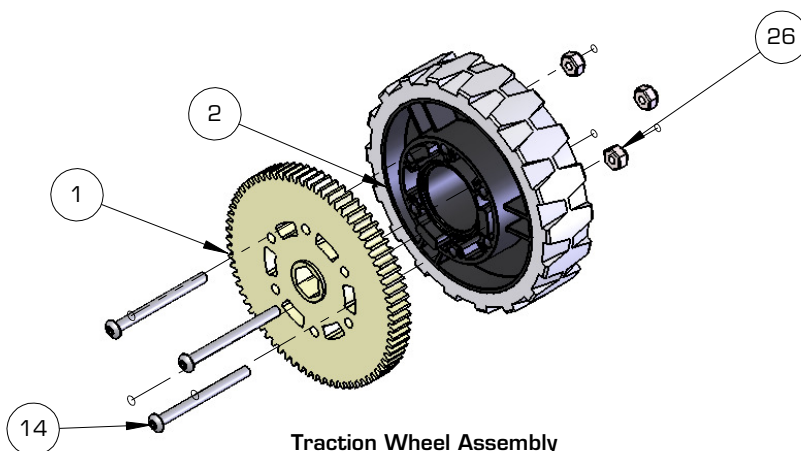
Omni Wheel Assembly



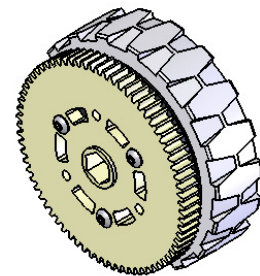
Omni Wheel Assembly

Step 9:

Assemble 72T gear (217-2716) to 4" VersaWheel DT (217-3197) using (3X) #8-32 screws and nuts. Build (2X) of this assembly.



Traction Wheel Assembly



Traction Wheel Assembly

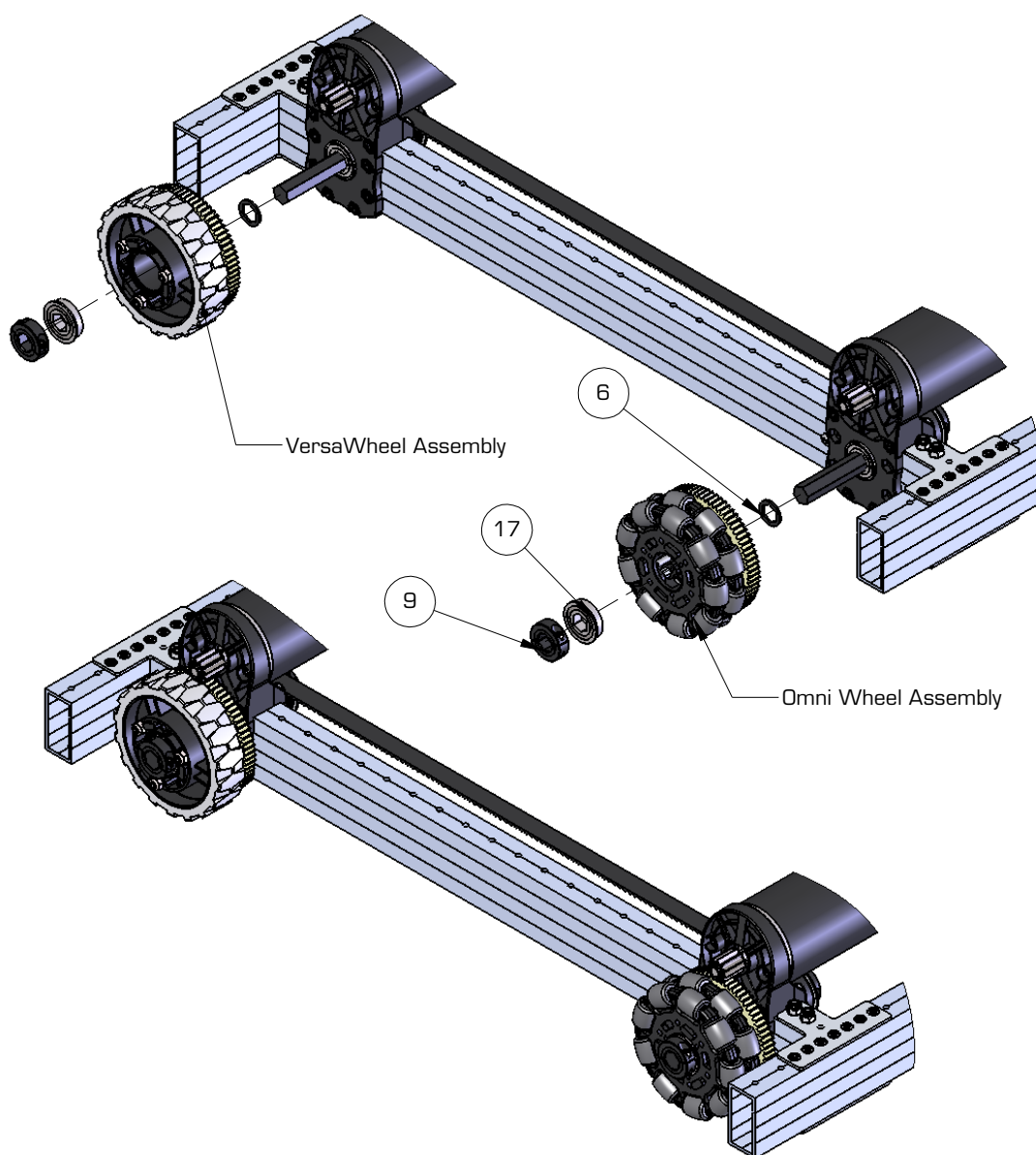
VersaChassis - 2 Traction and 2 Omni

217-8000-002

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
6	1/16" Acetal Spacer 1/2" Hex	217-3257	8
9	High Strength Clamping Shaft Collar - 1/2" Hex ID	217-4106	8
17	Flanged Bearing - 0.500" (Hex) x 1.125in x 0.313in v2	217-3875-001	12

Step 10:

Slide Acetal Spacer, wheel assembly, and ThunderHex bearing onto shaft. Secure with High Strength Clamping Shaft Collar. Mirror assembly to complete VersaChassis.



VersaChassis - 2 Traction and 2 Omni

217-8000-002

Opportunities to Expand...

This drivetrain is just one example of how you can use the versatile VEXpro VersaFrame. By reconfiguring the frame lengths and gussets, you can build almost any chassis you can imagine. This example configuration is compatible with a wide variety of VEXpro products, which are themselves designed to work together as part of a larger construction system. This versatility makes it easy to swap wheels, adjust drive speeds, change gearboxes, add more motors, or build other advanced functionality right into your design. Look at the product page for speed options.

You can achieve whatever goals you set, regardless of your resources.

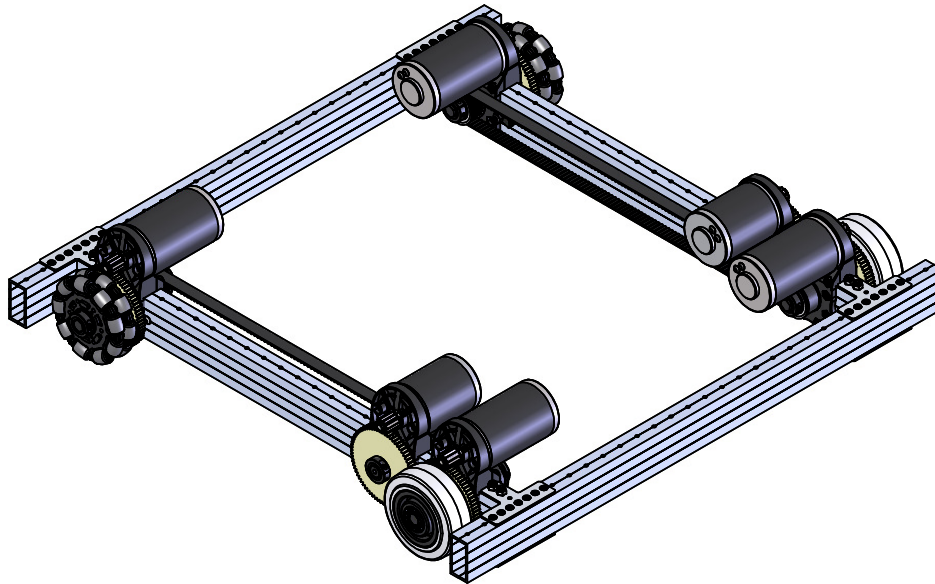
Below are a few of the hundreds of example modifications which can be made to the basic chassis.

As always, contact prosupport@vex.com for more help!

(6X) Motor Drive:

Add (2X) more Clamping gearbox assemblies with gears and slide them next to other clamping gearboxes to add more power to your drivetrain.

Using the VersaHub system, any 4" VEXpro wheel can be used with the Single Reduction Clamping gearbox.



(6X) Wheel Drive:

Add (2X) more Clamping gearbox assemblies with gears and place them in the middle of the rail for a 6wd robot.

Remember that this configuration does not have a center drop, so you may require Omni wheels at one end to turn smoothly.

